GENERAL COMPRESSION
Dispatchable Wind

November 27, 2007

Dr. Alan Lloyd
Chairman
California Air Resources Board
1001 I Street
Sacramento, CA 95814
VIA EMAIL

RE: ETAAC Report Discussion Draft released 11/15/07

Dear Chairman Lloyd:

General Compression (GC) appreciates the opportunity to provide comment on the recently released discussion draft report 'Economic and Technology Advancements for California Climate Solutions'. GC would like to commend the California Air Resources Board (CARB) and the Economic and Technology Advancement Advisory Committee (ETAAC) on compiling this effective draft discussion document to address the critical and broad issues necessary to achieve the AB 32 reduction targets. GC is developing a revolutionary Dispatchable Wind Power System (DWPS) that could help California cost-effectively meet its ambitious AB 32 GHG goals in a desired compliance time frame. The DWPS includes a utility-scale compressed air energy storage component that aligns precisely with the ETAAC energy subgroup's top technology development recommendation for CARB and other state agencies to support an aggressive program to develop electricity storage technologies.

The DWPS is a hybrid dispatchable wind power system that includes compression of air from directly in the nacelle of a wind turbine (as opposed to direct electricity generation in conventional WTGs), compressed-air energy storage, and a turbo-expander power block that can be configured to serve electrical load in a peak, intermediate, or baseload arrangements. This operational flexibility provides value to ratepayers unlike any other conventional renewable facility, and it can be accomplished at a highly competitive cost relative to conventional fossil-fuel generator stations in California's existing generator bid stack. California and other western states possess subsurface formations such as bedded salt deposits, depleted oil and gas fields and non-potable aquifer formations that would optimize the DWPS' reliability and performance. While the DWPS does require the addition of heat at the expansion stage, it remains dramatically more efficient (heat rate of approximately 40% of current peaking resource technology deployed in California). Additionally, GC intends for its technology to be 100% renewable with the addition of heat from such sources as bio-gas, biodiesel, concentrated solar, or other renewable or waste sources of heat. Note that a DWPS using natural gas as its expansion fuel would result in permissible CO2 emissions level of approximately 500 lbs/MWh, or about half of the CPUC interim GHG emission performance standard of 1,100 lbs/MWh based on the operation of a natural gas combined cycle gas turbine.

The DWPS is also capable of firming existing wind plant production to address the ancillary service and the growing integration challenges of intermittent and variable power. The intermittent-firming ability of the DWPS would allow for displacement of high-carbon energy resources that typically provide ancillary regulation and reserve services and alleviate integration

challenges encountered by system operators. The DWPS maximizes value of existing transmission assets by allowing existing wind projects with underutilized or available transmission capacity to add generating capacity without the addition of new transmission. A firming DWPS configuration increases transmission asset utilization by raising the effective capacity factors of existing wind farms, reducing both the fuel and new transmission costs to California ratepayers.

GC fully supports the ETAAC energy subgroup suggestion that CARB should actively promote re-powering vintage conventional wind farms as an AB 32 compliance strategy. Maximizing the energy extraction from California's strong wind resource areas can help fulfill RPS mandates. Repowering vintage sites with a prudent combination of state-of-art conventional WTGs and DWPS deployments could transform vintage intermittent resource extraction regions into dispatchable resource corridors with fully subscribed transmission elements. Dispatchable, low-carbon or carbon-free resource corridors would help CA attain and exceed RPS goals and AB 32 GHG compliance while providing reliable, firm, and peak electricity to the power system for utility ratepayers.

The DWPS represents strategic opportunity for California, transforming an intermittent into a capacity and energy resource, and allowing electricity providers to meet RPS and AB 32 mandates while serving load. GC fully understands and appreciates the enormous challenge that California faces to implement policies to reduce the state's GHG emissions by 25 to 29 percent by 2020. The DWPS will provide a valuable addition to the California supply mix and a significant technology that will help California achieve its RPS goals and AB 32 GHG compliance, all without compromising the CA ISO's ability to maintain resource adequacy. Storage will alleviate the intermittency shortcoming of renewable resources, but requires the State of California to drive key policy implementation such as Utility Resource Planning and Technology Deployment incentives as mentioned in the discussion report. Integrated Resource planning targets would clarify utility's storage installation targets and provide greater certainty to the investment community, while deployment incentives would foster the Clean Tech sector innovations that will ultimately benefit the state economy and environment.

Thank you for your attention. We look forward to participating in the CARB ETAAC process and other CARB proceedings. We've attached our recent comments filed at the California Energy Commission PIER workshop on 'Wind Storage Enhanced Technologies on the Grid' for further information on the DWPS. Feel free to contact me (t. 415-517-1341, cpineda@generalcompression.com) at your convenience with any questions regarding General Compression or our DWPS technology.

Best Regards,

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Senior Development Officer

CC: Steve Church
All ETAAC members